REMARKS

Initially, the Examiner has objected to the drawing as failing to comply with 37 C.F.R. 1.84(p)(4) based on the contention that differing elements have the same reference number. As an example, the Examiner states that reference character "11" is used to designate a supply apparatus, a gas directing device, and a nozzle, all at the same time. Accordingly, the Examiner has requested appropriate correction of the drawings.

Applicant has reviewed the drawings, and the specification of the application, and respectfully disagrees with the Examiner's contentions relative to the duplicate numbering of the elements "supply apparatus," "gas directing device," and "nozzle," and according traverses the objections. A brief review of the application shows that the "nozzle" element and the "gas directing device" element are in fact the same element. Further, it is clear from the specification that the "nozzle" is only one component of the larger device, the gas supply apparatus. As stated in the specification, "[t]he gas nozzles 11 are . . . [] gas directing devices, [and] part of a gas supply apparatus . . . ." (Page 7, lines 1-2). The specification goes on to describe the gas supply apparatus as including, among other things, the gas directing device (11), the gas supply line section (19), and the main valve (23).

Based on the above, it becomes clear that the three elements highlighted by the Examiner, namely the nozzle, the gas directing device, and the gas supply apparatus, are not all identified by element number 11. Instead, only the nozzle and the gas directing device are identified with element number 11, as they in fact comprise the same structure. Gas directing device is merely a broader term that incorporates the term "nozzle" therein. Further, Applicant notes that the gas supply apparatus incorporates several different structures, including the gas directing device. Therefore, the gas supply apparatus is <u>not</u> identified by element number 11, either in the

specification or the claims. Element number 11 is shown correctly in the drawings, and is described correctly throughout the specification as being the gas delivery device, or more specifically the nozzle. Accordingly, no correction of the drawings should be required at this time.

In addition to the above, the Examiner has objected to the specification and the abstract based on several minor informalities. Applicant has amended the specification accordingly. As such, Applicant submits that all of the Examiner's objections have been addressed and overcome, and respectfully requests withdrawal of all such objections.

The Examiner has rejected Claims 1-13 under 35 U.S.C. § 112, second paragraph, based on the grounds that they are indefinite. Specifically, the Examiner has rejected Claim 1 as having language that is vague and indefinite, alternative and nonequivalent structure recitations, and as being incomplete for omitting essential elements. Further, the Examiner has rejected Claim 12 as having a recitation that is ambiguous and indefinite. Applicant respectfully traverses the Examiner's rejections. In order to expedite the prosecution of the application, however, Applicant has amended Claims 1 and 12 so as to overcome the Examiner's rejection. Further, Applicant includes herein below explanations relative to Claim 1 that should render the Examiner's indefiniteness rejection of that claim moot.

Claim 1 was amended above to remove references to the term "particular" and to select one of the two alternate structures recited therein. Applicant, however, has not amended Claim 1 to include the additional elements suggested by the Examiner. Applicant submits that the absence of these elements, namely at least one sensor for detecting the intensity of the radiation, and at least one controller for controlling the volumetric flow of the existing gas based on the detected intensity signal, does not render the claim incomplete. A controller would be required in the present device only in those cases where changing operating conditions are expected, and the flow rate of the

supplied gas has to be changed during operation of the optical arrangement accordingly. Where the conditions of operation are well defined, however, such that no changes take place during operation, it would be sufficient to preset the volumetric flow of the gas once and for all, without the necessity of a controller. Accordingly, a sensor or detector for producing a signal for the controller would also not be required.

The Examiner additionally stated that the inclusion of the phrase "wherein the gas directing device is part of a sweeping device for the optical element and/or the optical arrangement" within Claim 12 renders the claim ambiguous and indefinite. It is not clear from the language of the Office Action what the exact nature of the ambiguity is, however, Applicant assumes that the Examiner is directing the rejection towards the use of an alternative within the claim, that is "and/or." Accordingly, Applicant has amended Claim 12, and added new Claim 14 to correct the supposed issue.

The Examiner has substantively rejected Claims 1, and 12-13 under 35 U.S.C. §102(b), on the grounds they are anticipated by U.S. Patent No. 5,995,263, issued to Tokuda et al (Tokuda '263). Additionally, the Examiner has rejected Claims 1-3, and 5-7, under 35 U.S.C. §103(a) as being anticipated by U.S. Patent No. 5,920,377, issued to Kim (Kim '377) in view of U.S. Patent No. 6,099,763 issued to Su et al (Su '763). Applicant respectfully traverses all of the Examiner's rejections. As will be explained below, none of the references teach, disclose or suggest a device in which the gas directing device is controllable so that the volumetric flow of the exiting gas has a magnitude and spatial distribution that are adapted to the intensity distribution of the radiation.

Tokuda '263 discloses arranging thermistors (30A and 30B) on portions of the surface of a lens (15) that are not directly illuminated. (Tokuda '263, Col. 7, lines 3-12). The thermistors determine the temperature that exists in those locations. The device additionally includes air

blowing units (32A and 32B) that blow air onto the lens 15 so as to keep the temperature of the lens 15, measured by the thermistors (30A and 30B), within a predetermined temperature range.

Tokuda '263 assumes, however, that a single temperature exists across the entire surface of the lens. Tokuda '263 includes a single temperature measurement device, and as such fails to recognize local differences in lens temperature across the surface of the lens. Since local differences in lens temperature are not of concern in Tokuda '263, it follows that the spatial repositioning of applied gasses is not necessary. Therefore, Tokuda '263 fails to show a device that can adapt the magnitude and the spatial distribution of the exiting gas, as claimed in the present invention. Therefore, Applicant submits that Tokuda '263 does not anticipate the present claims.

Further, the present claims are not made obvious by the combination of Kim '377, alone or in combination with any other reference, including Su '763. The present invention is directed to a novel Optical Arrangement that corrects imaging quality defects caused by rotationally non-symmetrical radiation passing through an optical element. The rotationally non-symmetrical nature of the radiation causes temperature profile differences across the lens, and at specific points within the lens, which differences can affect the quality of the image passing through the lens. The invention as claimed is directed to, among other things, and optical arrangement having "at least one gas directing device (11), which is . . . controllable in such a way that . . . the exiting gas has a magnitude and spatial distribution (17), which are adapted to the intensity distribution (6) of the radiation (1). (Claim 1).

Kim '377 does not teach, disclose or suggest such a device, either alone or in combination with any other reference. Kim '377 teaches an exposure system having multiple hoods for the correction of individual distortions within a lens. The hood is divided into sections that are directed towards different areas of the lens so that air of different temperatures can be delivered to each

section to correct for image defects in the lens. Kim '377, however, does not teach or suggest controlling the hood or any other gas delivery portion so that both the magnitude and spatial distribution of the exiting gas can be altered. Instead, the hood in Kim '377 preferably contains fixed sections (Kim '377, col. 5, lines 66-67), that deliver gas to specific areas of the lens. Thus, Kim '377 teaches a device that operates contrary to the present invention, which claims "at least one gas directing device (11), which is . . . controllable in such a way that . . . the exiting gas has a magnitude and spatial distribution (17), which are adapted to the intensity distribution (6) of the radiation (1)." (Claim 1). As such, Kim '377 neither anticipates, nor suggests the present invention as claimed, either alone or in combination with any other reference.

The Examiner attempts to remedy the deficiencies of Kim '377 by combining that reference with Su '763. Su '763, however, is directed to a completely different area of technology. As stated above, Kim '377 is directed towards a device for maintaining the image properties of a lens by correcting temperature defects within a projection lens. Su '763, on the other hand, discloses an apparatus and method for separating a newly formed lens from its mold. Su '763 discloses using nozzles for delivering pressurized gases to a chamber containing the cured lens, wherein the pressurized gases cool and contract the lenses for ease in separation of the newly formed lens from the mold. At no time does Su '763 teach or suggest using the pressurized nozzles for cooling microlithography lenses, or for homogenizing the temperature profile of those lenses in an operable environment. A person of ordinary skill in the art would not be motivated by reading Su '763 to combine that reference with the teachings of Kim '377.

Further, the teachings of Su '763 would frustrate the purpose of Kim '377, making the combination of the two references even more unwarranted. The purpose of Kim '377 is to deliver specific temperature gasses to various sections of a lens by directing the gasses to specific hood

sections in order to correct optical defects within the lens. Su '763, on the other hand, never even addresses the correction of optical defects at all. Su '763 is instead directed solely towards delivering cooling gasses to a formed lens, which, even more, are delivered in a non-locally specific manner. As such, there is no motivation or impetus to combine Kim '377 and Su '763.

Even if it were possible to combine those two references, which Applicant vehemently denies is possible, Applicant submits that the combined structure still does not show Applicant's invention as claimed. Applicant's invention claims "at least one gas directing device (11), which is . . . controllable in such a way that . . . the exiting gas has a magnitude and spatial distribution (17), which are adapted to the intensity distribution (6) of the radiation (1)." (Claim 1). Kim '377 teaches a static multi-hooded delivery device that does not alter both the magnitude and spatial distribution of exiting gas from a single hood. As such, even if the nozzle devices taught in Su '763 were combined with the teachings of Kim '377, that would not allow those nozzles to be controlled so as to alter the magnitude and spatial distribution of the exiting gas.

Based on the above, Applicant submits that Kim '377, either alone or in combination with any other prior art reference, does not teach, disclose, or suggest the present invention as claimed. Therefore, Claims 1-14 are neither anticipated nor made obvious by any of the references cited by the Examiner, either alone or in combination with any other prior art references.

In light of the foregoing, Applicant submits that Claims 1-14 of the application should now be in condition for allowance. Accordingly, reconsideration is respectfully requested.

Should anything further be required, a telephone call to the undersigned, at (312) 226-1818, is respectfully invited.

Respectfully submitted,

FACTOR & PARTNERS, LLC

Dated: September 5, 2002

Jacob D. Koering
One of Attorneys for Applicant

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on September 5, 2002.

Jacob D. Koering

AMENDMENTS TO THE SPECIFICATION WITH MARKINGS TO SHOW CHANGES

Please delete the present abstract and insert instead:

- - "An optical arrangement, in particular a microlithographic projection printing installation, has in particular a slot-shaped image field or rotationally non-symmetrical illumination. An optical element (5) is therefore acted upon in a rotationally non-symmetrical manner by the radiation of a light source. To temper the optical element (5), a supply apparatus (11, 19 to 23) for gas is used. The latter [comprises] <u>having</u> at least one supply line (21) and at least one gas directing device (11). The latter is aligned relative to the optical element (5) and controllable in such a way that the gas is directed by the gas directing device (11) towards the optical element (5). The volumetric flow of the exiting gas therefore has a magnitude and spatial distribution (17), which are adapted to the intensity distribution (6) of the radiation. By virtue of such tempering, rotationally non-symmetrical light-induced image defects in the optical element (5) are avoided or compensated.

[(Figure 2)]." - -

AMENDMENTS TO THE CLAIMS WITH MARKINGS TO SHOW CHANGES

1. An optical arrangement, [in particular] comprising a microlithographic projection printing installation[, in particular] having a [slot-shaped image field or] rotationally non-symmetrical illumination, comprising a light source which emits radiation, and an optical element which is heated by being acted upon by the radiation, and a supply apparatus for gas tempering the optical element,

wherein,

the supply apparatus (11, 19 to 23) comprises at least one supply line (21) and at least gas directing device (11), which is aligned relative to the optical element (5) and controllable in such a way that the gas is directed by the gas directing device (11) as a free flow towards the optical element (5) and the volumetric flow of the exiting gas has a magnitude and spatial distribution (17), which are adapted to the intensity distribution (6) of the radiation (1).

12. An optical arrangement as claimed in one of the preceding claims, wherein the gas directing device (11) is part of a sweeping device for the optical element (5) [and/or the optical arrangement (4, 5)].